

Robin L. E. Rich, M.A.

Rembrandtstr. 17/3
D-72622 Nürtingen
Germany

DECLARATION

In the matter of a PCT Application for Patent

File No. PCT/DE2004/001797

entitled

**ORGANIC CAPACITOR WITH VOLTAGE-CONTROLLED
CAPACITANCE**

Validation of the translation of a German text relating to said Application for Patent
filed by PolyIC GmbH & Co. KG

I, Robin L. E. Rich, M.A., of the above address, do hereby solemnly and sincerely declare that I am conversant with the German and English languages and am a competent translator thereof and that, to the best of my knowledge and belief, the attached document in the English language is a true and correct translation made by me of the attached New Claims of the German text of said Application for Patent.

Signed this seventeenth day of October, 2005

Robin L. E. Rich

BEST AVAILABLE COPY

NEW CLAIMS

1. An organic capacitor having voltage-controlled capacitance, comprising at least the following functional layers:

- a first electrode (2), a second electrode (5), and
- an insulator layer (4) disposed between the first and second electrodes (2, 5),

characterized by

at least one first semiconductor layer (3) provided between the first and second electrodes (2, 5), wherein

- the concentration of free charge carriers in at least said first semiconductor layer (3) being varied in a controlled manner by application of a voltage (U_{52}) between said first and second electrodes (2, 5),
- the concentration of said charge carriers determines the capacitance of the capacitor, and
- the concentration of said free charge carriers in at least said first semiconductor layer (3) is additionally varied in a controlled manner by a frequency of the applied voltage (U_{52}).

2. An organic capacitor as defined in claim 1, **characterized in that** the variation of the concentration of said free charge carriers results in a variation of an effective spacing (a) of the electrodes (2, 5) serving as capacitor plates, and said effective spacing (a) functionally determines the capacitance.
3. An organic capacitor as defined in any one of the previous claims, **characterized in that** the variation of the concentration of said free charge carriers results in a variation of an effective plate surface area, and said effective plate surface area functionally determines the capacitance.

4. An organic capacitor as defined in any one of the previous claims, **characterized in that** at least one of said first and second electrodes (2, 5) is a structured electrode (2', 5').
5. An organic capacitor as defined in any one of the previous claims, **characterized in that** at least one of said first and second structured electrodes (2', 5') is embedded in said semiconducting layer (3).
6. An organic capacitor as defined in any one of the previous claims, **characterized in that** said organic capacitor comprises a second semiconductor layer (6) provided between said first and second electrodes (2, 5) and disposed on one of the sides of said insulator layer (4) opposite said first semiconductor layer (3), the concentration of said free charge carriers in said second semiconductor layer (6) being varied in a controlled manner by applying a voltage (U_{52}) between said first and second electrodes (2, 5).
7. An organic capacitor as defined in claim 6, **characterized in that** said first and second semiconducting layers (3, 5) are of opposed conductance types.
8. An organic capacitor as defined in claim 6 or claim 7, **characterized in that** at least one of said first and second structured electrodes (2', 5') is embedded in at least one of said first and second semiconductor layers (3, 6).
9. An organic capacitor as defined in any one of the previous claims, **characterized in that** at least one of said functional layers is a layer of an organic substance.